CLAIMS

What is claimed:

1. A method for defining tone signals in a voice activity detection (VAD) device, comprising:

defining a threshold for zero amplitude change;

calculating a zero crossing rate of a signal;

extracting a set of parameters from a plurality of duration periods of said signal;

defining a tolerance threshold between said plurality of duration periods when a zero amplitude change occurs;

calculating a maximum difference between said plurality of duration periods; and

comparing said maximum difference with said threshold.

2. The method of claim 1, wherein said calculating said zero crossing rate comprises:

determining, for a signal sample with a zero value amplitude at the zero crossing point, a tangent value of the sample; and

defining the zero value amplitude as a non-zero value depending upon the tangent of said sample point.

3. The method of claim 2, wherein said defining comprises defining said zero value

amplitude according to whether said tangent is positive or negative.

3. The method of claim 1, wherein said calculating said maximum difference comprises calculating a product between the sample and the sample's adjacent sample in a group of signal samples.

4. The method of claim 1, further comprising:

defining a range of said signal that does not contain a zero crossing point;

comparing said range with said threshold.

5. The method of claim 1, wherein the maximum difference is calculated between a sum of all said durations and a single said duration.

6. The method of claim 1, wherein the maximum difference is calculated using a mean difference between a sum of all said durations and a single duration.

7. The method of claim 1, wherein the method defines tone signals according to an International Telecommunications Union (ITU) recommendation G.729 Annex B VAD device.